Magnetic properties of spherical quantum dot

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We study orbital magnetism in spherical quantum dot with a model confining potential. A spherically symmetric potential of charged nanoshell has the Tomson's oscillatory behavior inside the nanoshell and reproduces the Coulomb potential of the nucleus. This model potential allows for a continuous transition between the two limiting cases.

Proposed model allows to find electron energy levels and corresponding eigenfunctions. Obtained transcendental equation for the charging spectra depend on the size and the form of quantum dot. These parameters become so important that the energy of *s*-level is several times lower than for a point quantum dot.

We consider noninteracting electrons in a uniform magnetic field **B**. The magnetization of the system is computed using parameters of quantum dot. There is an additional possibility to control and to optimize energy structure of spherical quantum dot in order to obtain the real structures with predetermined physical properties.